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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,326	08/29/2003	Anand A. Kekre	VRT0098US	1638

60429 7590 10/11/2007	**EXAMINER**	
CAMPBELL STEPHENSON LLP	PHAM, KHANH B	
11401 CENTURY OAKS TERRACE		
BLDG. H, SUITE 250	**ART UNIT**	**PAPER NUMBER**
AUSTIN, TX 78758	2166	

MAIL DATE	DELIVERY MODE
10/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/652,326	KEKRE, ANAND A.
	Examiner	Art Unit	
	Khanh B. Pham	2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _12 July 2007_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1,2,5-8,10,12-15,17 and 19-21_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1,2,5-8,10,12-15,17 and 19-21_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   The amendment filed July 12, 2007 has been entered. Claims 1, 3, 8, 10, 15, and

17 have been amended. Claims 1, 2, 5-8, 10, 12-15, 17, 19-21 are pending in this

Application.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims **1, 3, 5-8, 10, 12-15, 17, 19-21** are rejected under 35 U.S.C. 103(a) as

being unpatentable over Federwisch (US 6,889,228 B1), and in view of Patterson et al.

("SnapMirror: File-System-Based Asynchronous Mirroring for Disaster Recovery"),

hereinafter referred to as "**Federwisch**" and "**Patterson**" respectively.

As per claims 1, 8, and 15, Federwisch teaches a method, apparatus and

medium for performing cascaded replication (See Fig. 2) comprising:

- "asynchronously replicating data to be written to a data volume of a first node to

   a data volume of a second node" at Col. 6 lines 15-55 and Fig. 2;

- "replicating data to be written to said data volume of said second node to a data volume of a third node, wherein said replicating data to be written to said data volume of said second node comprises periodically replicating, at a first frequency, said data to be written to said data volume of said second node to said data volume of said third node" at Col. 6 lines 15-55 and Fig. 2;

- "replicating data to be written to said data volume of said third node to a data volume of a fourth node, wherein said replicating data to be written to said data volume of said third node comprises periodically replicating, at a second frequency, said data to be written to said data volume of said third node to said data volume of said fourth node" at Col. 6 lines 15-55 and Fig. 2;

Federwisch employs SNAPMIRROR software to perform cascaded replication, but does not explicitly teach that "said first frequency is higher than said second frequency." Patterson teaches a method for achieving the right balance between potential data loss and costs of maintaining a replica in SNAPMIRROR, by adjusting update frequency. Patterson teaches at page 2, Col.1, 1st paragraph that: "Users set the update frequency. If the update frequency is high, the mirror will be nearly current with the source and very little data will be lost when disaster strikes. But, by lowering the update frequency, data managers can reduce the performance and network cost of maintaining the mirror at the risk of increased data lost".

Thus, it would have been obvious to one of ordinary skill in the art at the time of

the invention was made to implement Federwisch's method using two different update

frequencies as suggested by Patterson: the first frequency is higher to reduce data loss

and the second frequency is lower to reduce network cost and improve performance of

the system.

As per claims 3, 10, and 17, Federwisch teaches a method of performing

cascaded replication comprising:

- "asynchronously replicating data to be written to a data volume of a first node to

  a data volume of a second node" at Col. 6 lines 15-55 and Fig. 2;

- "replicating data to be written to said data volume of said second node to a data

  volume of a third node, wherein said replicating data to be written to said data

  volume of said second node comprises asynchronously replicating said data to

  be written to said data volume of said second node to said data volume of said

  third node" at Col. 6 lines 15-55 and Fig. 2;

- "replicating data to be written to said data volume of said third node to a data

  volume of a fourth node, wherein said replicating data to be written to said data

  volume of said third node comprises periodically replicating, a first frequency,

  said data to be written to said data volume of said third node to said data volume

  of said fourth node" at Col. 6 lines 15-55 and Fig. 2;

- "replicating data to be written to said volume of said fourth node to data volume

  of a fifth node, wherein said replicating data to be written to said data volume of

said fourth node comprises periodically replicating, at a second frequency, said

data to be written to said data volume of said fourth node to said data volume of

said fifth node" at Col. 6 lines 15-55 and Fig. 2;

Federwisch employs SNAPMIRROR software to perform cascaded replication,

but does not explicitly teach that "said first frequency is higher than said second

frequency." Patterson teaches a method for achieving the right balance between

potential data loss and costs of maintaining a replica in SNAPMIRROR, by adjusting

update frequency. Patterson teaches at page 2, Col.1, 1st paragraph that: "Users set

the update frequency. If the update frequency is high, the

mirror will be nearly current with the source and very little

data will be lost when disaster strikes. But, by lowering the

update frequency, data managers can reduce the performance and

network cost of maintaining the mirror at the risk of increased

data lost".

Thus, it would have been obvious to one of ordinary skill in the art at the time of

the invention was made to implement Federwisch's method using two different update

frequencies as suggested by Patterson: the first frequency is higher to reduce data loss

and the second frequency is lower to reduce network cost and improve performance of

the system.

As per claims 5, 12, and 19, Federwisch and Patterson teach the method,

apparatus and mediums of claims 3, 10, 17 discussed above. Federwisch also teaches:

"wherein said asynchronously replicating data to be written to said data volume of said

first node comprises, asynchronously replicating data to be written to a data volume of a

primary node to a data volume of an intermediate node; and said asynchronously

replicating data to be written to said data volume of said second node comprises,

asynchronously replicating data to be written to said data volume of said intermediate

node to a data volume of a secondary node" at Col. 6 lines 15-55 and Fig. 2.

As per claims 6, 13, 20, Federwisch and Patterson teach the method, apparatus

and mediums of claims 5, 12, 19 as discussed above. Federwisch also teaches:

"wherein said asynchronously replicating data to be written to said data volume of said

intermediate node comprises asynchronously replicating data to be written to said data

volume of said intermediate node to a data volume of each of a plurality of secondary

nodes" at Col. 7 lines 48-60 and Figs. 4.

As per claims 7, 14, and 21, Federwisch and Patterson teach the method,

apparatus and mediums of claims 3, 10, 17 as discussed above. Federwisch also

teaches:

- "said asynchronously replicating data to be written to said data volume of said

   first node comprises asynchronously replicating data to be written to said data

   volume of said first node to said data volume of said second node using a first

   data link coupled between said first node and said second node" at Col. 6 lines

   15-55 and Fig. 2;

- "said asynchronously replicating data to be written to said data volume of said second node comprises asynchronously replicating data to be written to said data volume of said second node to said data volume of said third node using a second data link coupled between said second node and said third node" at Col. 6 lines 15-55 and Fig. 2;

- "and said first data link has a higher bandwidth than said second data link" at Col. 7 lines 48-60 and Fig. 4.

Response to Arguments

4.   Applicant's arguments filed July 12, 2007 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (571) 272-4116. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Khanh B. Pham
Primary Examiner
Art Unit 2166

October 9, 2007